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REMARKS

Claims 1-59 are pending. By this Amendment, claims 10-11, 28-29 and 45-47 are amended to comply with the recommendation of the Office Action and to place them in condition for allowance. No new matter has been added.

Claim Rejection under 35 U.S.C. § 103

Claims 1-3, 5, 7-9, 12-21, 23, 25-27, 30-38, 40, 42-44 and 48-59 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Morimoto, et al. (U.S. Pat. No. 6,018,697) in view of Johnson (U.S. Pat. No.5,892,847). Applicant respectfully traverses the rejection.

Claim 1 recites the limitation a method for applying at least one filter to each of a plurality of image frames received in an image processing apparatus to generate a discrete output value, wherein each filter screens for a differentiable characteristic associated with an object of interest that is unique to that filter. Claim 1 further recites the limitation of using said image processing apparatus to identify image portions from said plurality of image frames that exhibit said differentiable characteristic in response to a logical combination of said discrete output values for each of said at least one filter for said plurality of image frames as potentially having a region of interest representing the common object of interest. The Office Action asserts that Morimoto discloses the step of receiving a plurality of image frames in an image processing apparatus and using the image processing apparatus to identify image portions from said plurality of image frames that exhibit differentiable characteristic in response to a logical combination of discrete output values for each of said at least one filter for said plurality of image frames as potentially having a region of interest representing the common object of

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interest. The Office Action cites column 2, lines 43-56 to infer support for "a characteristic or distinctive object at the intersection" and Fig. 13, column 12, line 55 through column 13, line 14 to infer support in the Morimoto disclosure for "number of segmentation." Applicants respectfully disagree with this assessment due to the following reasons.

The Morimoto reference is directed to a navigation system for a vehicle and one version of the invention provides guidance for a *preset optimal route* to a destination. All types of data necessary for navigation such as map data, intersection data, road data, various guidance data, etc are stored in the information storage unit 3. See column 7, lines 26 -28 of Morimoto. In particular, the "characteristic or distinctive object at the intersection" or the branch point is already registered in the information storage unit 3. See column 9, lines 22-35 of Morimoto. Image recognition in Morimoto involves *searching the stored data* to judge whether or not the acquired image data includes one of the distinctive objects identified as such in the stored data. The distinctive object in the image data is recognized by *comparison of image data* of the road with information on color and shape in the image data file stored in the information storage unit 3. See column 8, lines 10-17 of Morimoto.

In contrast, Applicants' invention involves the application of at least one filter to recognize a common object of interest in a plurality of image frames *without use of* reference targets, templates, known image capture conditions or searching and comparison as taught by Morimoto. See, for example, page 29, ¶ 2 of Applicants' specification as filed. The invention of Applicants' claim 1 involves the application of at least one filter to screen for a differentiable characteristic associated with an object of interest that is unique to that filter and generate a discrete output value. The filters extract image portions that exhibit such differentiable characteristics in response to a logical combination of said discrete output values for each of the

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at least one filter for the plurality of image frames as potentially having a region of interest representing the common object of interest. In fact, the Office Action admits that Morimoto does not disclose applying at least one filter to each of said plurality of image frames to generate a discrete output value as recited by Applicant. See page 2 of the Office Action where it is noted that "Morimoto does not explicitly state applying at least one filter to each of said plurality of image frames...."

The Office Action attempts to correct this deficiency in Morimoto by combining Morimoto with Johnson and asserting that Johnson teaches at least one filter (col. 5, lines 45-53, image using a first Read Spline Filter, an image classifier, a discrete cosine transform, a second and third Reed Spline filter, a differential code modulator, an enhancement analyzer). The Johnson reference is directed to an image compression system. See, for example, column 4, and lines 18 -20 of the Johnson reference. As disclosed in Johnson, an encoder 102 uses decimation, filtering, mathematical transforms, and quantization techniques *to concentrate an image into fewer data samples* representing the image with fewer bits per pixel than the original format. The decoder 110 expands the compressed file 104 to the original source image size. See Johnson column 8, lines 47 - 64 for example. Johnson does not teach or contemplate application of a filter to *screen for a differentiable characteristic associated with an object of interest that is unique to that filter* and generate a discrete output value as claimed by Applicant. The filter of Johnson on the other hand will indiscriminately concentrate all images present in a target image frame into fewer data samples. Once so compressed, there is no teaching or suggestion in Johnson on extracting *image portions* that exhibit the claimed differentiable characteristics *in response to a logical combination of discrete output values* for each of the at least one filter for the plurality of image frames as potentially having a region of interest representing the common object of

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interest as recited in claim 1 of the present Application. Instead, the decoder of Johnson will expand the concentrated images to indiscriminately recreate all the source images present in the target image frame. In the absence of any teaching, suggestion or motivation in either Morimoto or Johnson, one of skill in the art cannot combine the searching and comparison as taught by Morimoto with the image compression and decoding disclosed by Johnson to arrive at Applicants' invention of claim 1. Applicant respectfully submits that the Office Action has failed to make a prima facie case of obviousness.

For the foregoing reasons, Applicants maintain that claim 1 is allowable and respectfully request withdrawal of the rejections to claim 1 and claims 2-3, 5, 7-9, 12- 18 that depend from independent claim 1.

Regarding independent claim 19, the Office Action asserts that Morimoto discloses an image processing apparatus for determining whether a plurality of image frames may contain a common object of interest, the apparatus comprising a frame buffer that stores digitized pixels of said plurality of digitized image frames wherein said plurality of image frames are generated by at least one imaging device, at least one filter operably connected to said frame buffer that generates a discrete output value in response to each pixel of each image frame, wherein each filter screens for a differentiable characteristic associated with an object of interest that is unique to that filter; and an image processor that identifies image portions from said plurality of image frames that exhibit said differentiable characteristic in response to a logical combination of said discrete output values for each of said at least one filter for said plurality of image frames as potentially having a region of interest representing the common object of interest. The Office Action cites claim 1, and Fig. 1, column 6, lines 9-22 of Morimoto in support of the aforementioned assertion.

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Independent claims 19, 36, 54, 58 and 59 are allowable at least for the very same reasons that claim 1 is allowable. As discussed in the foregoing paragraphs in connection with Applicants' claim 1, neither Morimoto nor Johnson disclose the filter claimed by Applicant in claims 1, 19, 36, 58 and 59. Nor do they disclose the structure corresponding to the means expression "second means for screening each of said image frames to determine whether an object of interest is present within said frames and generating a value output signal corresponding to each of said image frame," recited in claim 54 and disclosed, for example, on page 20, lines 13 -19 of Applicants' specification as originally filed. In fact, the word "filter" is not to be found in Morimoto's disclosure, and the term "filter" as used by Johnson does not refer to the "filter" recited by Applicant in claims 1, 19, 36, 54, 58 and 59 as discussed above in connection with the rejection of claim 1. Furthermore, neither Morimoto nor Johnson disclose the image processor of Applicants' claim 19, 58 and 59 wherein the image processor is characterized in that it identifies or is used to identify image portions from the plurality of image frames that exhibit the differentiable characteristics in response to a logical combination of the discrete output values for each of the at least one filter for the plurality of image frames as potentially having a region of interest representing the common object of interest.

In the absence of any teaching, suggestion or motivation in either Morimoto or Johnson, one of skill in the art cannot combine Morimoto and Johnson as suggested by the Office Action to arrive at Applicants' invention of claims 19, 36, 54, 58 and 59. Applicant respectfully submits that the Office Action has failed to make a prima facie case of obviousness.

Claims 4, 6, 22, 24, 39 and 41 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Morimoto, et al. in view of Johnson, as applied to claims above and further in

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view of Yuen (U.S. Pat. No. 5,949,914). Claims 4, 6, 22, 24, 39 and 41 depend directly or

indirectly from allowable independent claims 1, 19 and 36 and are therefore allowable for at least

the same reasons the independent claims from which they depend are allowable.

For the foregoing reasons, Applicants respectfully request withdrawal of the rejections to

independent claims 19, 36, 54, 58 and 59 as well as claims 4, 6, 22, 24, 39 and 41 that depend

directly or indirectly from the allowable independent claims 1, 19, and 36.

Allowable Subject Matter

Claims 10-11, 28-29 and 45-47 were indicated allowable if rewritten to overcome the

rejections under 35 U.S.C. § 112, second paragraph, set forth in this Office action and to include

all of the limitations of the base claim and any intervening claims. Applicants have amended

claims 10-11, 28-29 and 45-47 as recommended by the Office Action so as to place them in

condition for allowance. In view of the above amendments, Applicants respectfully request the

rejection to claims 10-11, 28-29 and 45-47 be withdrawn.
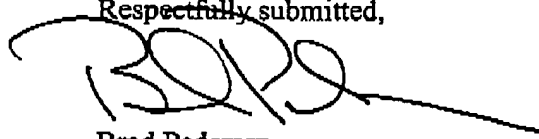
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CONCLUSION

In view of the foregoing, it is submitted that this application is in condition for allowance.

Favorable consideration and prompt allowance of the application are respectfully requested.

The Examiner is invited to telephone the undersigned if the Examiner believes it would

be useful to advance prosecution.

Respectfully submitted,

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